WE CLAIM:

1. A method for automatically finding the best matches between buyers' requests and sellers' offerings in a market, for communicating those matches, and for executing commitments based on those matches, said method comprising:

(a) creating a buyers abstract representation of at least one attribute of a request, and the relationship between at least one utility of the request and at least one state of the at least one attribute;

(b) creating a sellers abstract representation of at least one attribute of an offer, and the relationship between the total price of the offering and at least one state of the at least one attribute;

(c) computing a rating for overall satisfaction of the at least one attribute of a request with respect to a given offer;

(d) determining the quantity and identity of assignments of sellers' offerings to buyers' requests that produces the best set of matches for a given market; and

(e) signaling that the quantities and identities of assignments are accepted and that the transaction is committed by buyers and sellers.

2. A method of claim 1 wherein market value data is captured from market transactions, and used to automatically predict the costs of attribute states in hypothetical transactions, such capture and prediction method comprising:

(a) recording the request and offer data, along with the transaction price and quantity, for the committed transactions, and for other transactions that scored sufficiently well, and for requests and offers that were not matched in the market;

(b) inferring market value relationships from other data sources, such as sellers' advertisements, and or buyers' requests for proposals; and

(c) using of mathematical function approximation techniques for constructing market value functions that describe the relationship between price and the states of various attributes in a hypothetical market.

3. A method of claim 2 wherein buyers' requests are automatically joined in a consortium, by steps comprising :

(a) forming the best partition of the buyers' requests into groups or singletons of requests whose representation of attributes can be satisfied by the same seller offering;

(b) forming the combined abstract representation of the requests for the consortium, said representation which will satisfy each buyer in the consortium; and

(c) constructing an artificial negotiating entity that will represent at least one consortium, and can conceal the identities of the buyers in the consortium.

4. A method of claim 2 wherein sellers' offerings are automatically joined in a consortium, by steps comprising:

(a) forming the best partition of the sellers' offerings into groups or singletons of offerings which considered together achieve the highest values on hypothetical market transactions, with regard to the value functions constructed in claim 2;

(b) forming the abstract representation of the offerings for the consortium, said representation which will represent each offer in the consortium; and

(c) constructing an artificial negotiating entity that will represent at least one consortium, and can conceal the identities of the sellers in the consortium.

5. A method of claim 2 wherein the at least one attribute includes both intrinsic qualities of the object of the request or offer, and extrinsic qualities of the transaction or market protocols, wherein the extrinsic attributes comprise commitment protocols and time qualifications.

6. A method of claim 5 wherein the method further comprises:

(a) combining abstract representations from at least two market participants, to combine maximize the satisfaction for the consortium of those participants, and

(b) using buyers' consortiums rather than individual buyers and sellers' consortiums, or individual sellers, in determining the best set of matches,

whereby a transaction can be accomplished between consortia, rather than individual buyers and sellers.

7. A method of claim 6 further comprising capturing the market value data from market transactions, and using the market value data to construct market value functions to automatically predict the costs of attribute states in hypothetical transactions, and joining buyers' requests automatically in a consortium by:

(a) forming the best partition of the buyers' requests into groups or singletons of requests whose representation of attributes can be satisfied by the same seller offering;

(b) forming the combined abstract representation of the requests for the consortium, said representation which will satisfy each buyer in the consortium; and

(c) constructing an artificial negotiating entity that will represent at least one consortium, and can conceal the identities of the buyers in the consortium;

and automatically joining sellers' offerings in a consortium by:

(d) forming the best partition of the sellers' offerings into groups or singletons of offerings which considered together achieve the highest values on hypothetical market transactions, with regard to the value functions constructed in claim 2;

(e) forming the abstract representation of the offerings for the consortium, said representation which will represent each offer in the consortium; and

(f) a means of constructing an artificial negotiating entity that will represent at least one consortium, and can conceal the identities of the sellers in the consortium,

and using the market value data from transactions to construct mathematical function approximations predicting the value of states of attributes for hypothetical transactions to construct a stream or compendium of market information.

8. A method of claim 7 further comprising numerically representing the determination of best assignments and quantities as an optimization

problem and optimizing the assignments and quantities by finding the total of each buyer's and each seller's satisfaction with the transactions to be committed.

9. A method of claim 8 further comprises matching the at least one attribute of a request and the at least one attribute of an offer by inferring the match of the attribute qualities of a request which are logically implied by attribute qualities of an offer.

10. A method of claim 9 further comprising determining the quantity and identity of assignments of sellers' offerings to buyers' requests which produce the best set of feasible matches for a given market.

11. A method of claim 10, wherein the mathematical function approximation technique used to relate market value to attribute states is at least one technique selected from the group consisting of:

(a) linear regression,

(b) non-linear regression,

(c) machine learning techniques,

(d) neural nets,

(e) polynomial approximations, and

(f) Chebyshev approximation.

12. The method of claim 10 wherein the optimization problem is solved by at least one technique selected from the group consisting of:

(a) heuristic search,

(b) numeric optimization,

(c) genetic algorithms,

(d) mixed integer programming,

(e) simulated annealing,

(f) dynamic programming,

(g) MonteCarlo and quasi-MonteCarlo,

(h) interval methods,

(i) Lagrangian relaxation methods,

(j) meta-genetic algorithms,

(k) differential genetic programming,

(l) sequential linear approximation,

(m) sequential quadratic approximation,

(n) constraint propagation methods,

(o) gradient methods,

(p) enumeration,

(q) parallel execution of optimization techniques, and

(r) interleaved execution of techniques.

13. A method of claim 10 further comprising using a total market excess value as the measure of highest total market value.

14. A method of claim 10 further comprising using a multiagent system to distribute the processing across many processors and memory devices to achieve timely calculations of best assignments and quantities.

15. A method of claim 10 wherein a measure of the utility at the least one state of the at least one attribute is used to compute a rating for the overall satisfaction of a request with respect to a given offering by using at least one technique selected from the group consisting of:

(a) weighted fuzzy-logic conjunction operators,

(b) weighted geometric means,

(c) a weighted version of Yager's T-NORM,

(d) weighted arithmetic means, and

(e) a weighted combination, with the weights derived via analytic hierarchy analysis.

16. A method of claim 10 wherein the request and offer data, the transaction price and quantity, the committed transactions, other transactions that scored sufficiently well, and the requests and offers that were not matched in the market are made available to market participants.

17. A method of claim 10 wherein different instances of at least one module of the entire system is specialized for each different market.

18. A method of claim 10 wherein an ontology is used for inferring the match of the at least one attribute state of a request which is logically implied by the at least one attribute state of an offer.

19. A method of claim 10 wherein explicit transfer of funds is not required.

20. A method of claim 10 wherein advertisement of the availability of commitment protocols and time qualifications supported by the system leads to the market evolution of the most efficient protocols and time qualifications.

21. A method of claim 10 further comprising advertising the optimality of honest characterization of the utility of each attribute utility causing market participants to communicate an honest assessment of those utilities, thereby improving the market for both buyers and sellers.

22. A method of claim 10 further comprising invoking auction protocols when there is at least two requests per one offer or at least two offers per one request.

23. A method of claim 10 wherein the abstract representation of the relationship of the utility of an attribute of the request, is created using at least one technique selected from the group consisting of:

(a) linear functions,

(b) piece-wise linear functions,

(c) logistic functions,

(d) cubic splines,

(e) look-up tables, and

(f) other numeric functions that compute utility with respect to a given attribute's states.

24. A method of claim 10 wherein the abstract representation of the relationship between price of the offer and at least two states of an attribute of the offer, is created using at least one technique selected from the group consisting of:

(a) linear functions,

(b) piece-wise linear functions,

(c) logistic functions,

(d) cubic splines,

(e) look-up tables, and

(f) other numeric functions that compute price with respect to a given attribute's states.

25. A method of claim 10 further comprising communicating the abstract representations of requests and offerings by termsheets and offersheets, respectively.

26. A method of claim 10 further comprising describing the requests as employment positions and describing the offerings as employee attributes and compensation requirements.

27. A method of claim 10 further comprising describing the requests as tasks to be accomplished, and describing the offers as agents, people and or software, willing to accomplish those tasks.

28. A computer system for automatically finding the best matches between buyers' requests and sellers' offerings in a market, for communicating those matches, and for executing commitments based on those matches, comprising:

(a) a buyer's abstract representation of at least one attribute of a request, and the relationship between at least one utility of the request and at least one state of the at least one attribute;

(b) a seller's abstract representation of at least one attribute of an offer, and the relationship between the total price of the offering and at least one state of the at least one attribute;

(c) means for computing a rating for overall satisfaction of the at least one attribute of a request with respect to a given offer;

(d) means for determining the quantity and identity of assignments of sellers' offerings to buyers' requests that produces the best set of matches for a given market; and

(e) means for signaling that the quantities and identities of assignments are accepted and that the transaction is committed by buyers and sellers.

29. A computer system of claim 28 for capturing market value data from market transactions and using the data to automatically predict the costs of attribute states in hypothetical transactions, wherein the system further comprises:

(a) means for recording the request and offer data, along with the transaction price and quantity, for the committed transactions, and for other transactions that scored sufficiently well, and for requests and offers that were not matched in the market;

(b) means for inferring market value relationships from other data sources, such as sellers' advertisements, and or buyers' requests for proposals; and

(c) means for using mathematical function approximation techniques for constructing market value functions that describe the relationship between price and the states of various attributes in a hypothetical market.

30. A computer system of claim 29 for automatically joining buyers' requests in a consortium, wherein the system further comprises:

(a) means for forming the best partition of the buyers' requests into groups or singletons of requests whose representation of attributes can be satisfied by the same seller offering;

(b) means for forming the combined abstract representation of the requests for the consortium, which will satisfy each buyer in the consortium; and

(c) means for constructing an artificial negotiating entity that will represent at least one consortium, and can conceal the identities of the buyers in the consortium.

31. A computer system of claim 29 wherein sellers' offerings are automatically joined in a consortium, wherein the system further comprises:

(a) means for forming the best partition of the sellers' offerings into groups or singletons of offerings which considered together achieve the highest values on hypothetical market transactions, with regard to the market value functions;

(b) means for forming the abstract representation of the offerings for the consortium, said representation which will represent each offer in the consortium; and

(c) means for constructing an artificial negotiating entity that will represent at least one consortium, and can conceal the identities of the sellers in the consortium.

32. A computer system of claim 29 wherein the at least one attribute includes both intrinsic qualities of the object of the request or offer, and extrinsic qualities of the transaction or market protocols, and wherein the extrinsic attributes comprise commitment protocols and time qualifications.

33. A computer system of claim 32 wherein a transaction can be accomplished between consortia, rather than individual buyers and sellers, the system further comprises:

(a) means for combining abstract representations from at least two market participants, to maximize the satisfaction for the consortium of those participants, and

(b) means for regarding buyers' consortiums rather than individual buyers and sellers' consortiums, or individual sellers, in determining the best set of matches.

34. A computer system of claim 33, wherein the market value data is captured from market transactions, and used to construct market value functions to automatically predict the costs of attribute states in hypothetical transactions, and wherein buyers' requests are automatically joined in a consortium, wherein the system further comprises:

(a) means for forming the best partition of the buyers' requests into groups or singletons of requests whose representation of attributes can be satisfied by the same seller offering;

(b) means for forming the combined abstract representation of the requests for the consortium, said representation which will satisfy each buyer in the consortium; and

(c) means for constructing an artificial negotiating entity that will represent at least one consortium, and can conceal the identities of the buyers in the consortium;

and wherein sellers' offerings are automatically joined in a consortium, wherein the system further comprises:

(d) means for forming the best partition of the sellers' offerings into groups or singletons of offerings which considered together achieve the highest values on hypothetical market transactions, with regard to the market value functions;

(e) means for forming the abstract representation of the offerings for the consortium, said representation which will represent each offer in the consortium; and

(f) means for constructing an artificial negotiating entity that will represent at least one consortium, and can conceal the identities of the sellers in the consortium,

and wherein the market value data from transactions is used to construct mathematical function approximations predicting the value of states of attributes for hypothetical transactions is used to construct a stream or compendium of market information.

35. A computer system of claim 34 wherein the determination of best assignments and quantities is represented numerically as an optimization problem, and the assignments and quantities can be found by optimizing the total of each buyer's and each seller's satisfaction with the transactions to be committed.

36. A computer system of claim 35 wherein the at least one attribute of a request is matched to the at least one attribute of an offer by inferring the match of the attribute qualities of a request which are logically implied by attribute qualities of an offer.

37. A computer system of claim 36 wherein the means of determining the quantity and identity of assignments of sellers' offerings to buyers' requests produces the best set of feasible matches for a given market.

38. A computer system of claim 37 wherein the mathematical function approximation technique used to relate market value to attribute states is at least one technique selected from the group consisting of:

(a) linear regression,

(b) non-linear regression,

(c) machine learning techniques,

(d) neural nets,

(e) polynomial approximations, and

(f) Chebyshev approximation.

39. A computer system of claim 37 wherein the optimization problem is solved by at least one technique selected from the group consisting of:

(a) linear regression,

(b) non-linear regression,

(c) machine learning techniques,

(d) neural nets,

(e) polynomial approximations, and

(f) Chebyshev approximation.

12. The method of claim 10 wherein the optimization problem is solved by at least one technique selected from the group consisting of:

(a) heuristic search,

(b) numeric optimization,

(c) genetic algorithms,

(d) mixed integer programming,

(f) simulated annealing,

(g) dynamic programming,

(f) MonteCarlo and quasi-MonteCarlo,

(g) interval methods,

(h) Lagrangian relaxation methods,

(i) meta-genetic algorithms,

(j) differential genetic programming,

(k) sequential linear approximation,

(l) sequential quadratic approximation,

(m) constraint propagation methods,

(n) gradient methods,

(o) enumeration,

(p) parallel execution of optimization techniques, and

(q) interleaved execution of techniques.

40. A computer system of claim 37 wherein a total market excess value is used as the measure of highest total market value.

41. A computer system of claim 37 wherein a multiagent system is used to distribute the processing across many processors and memory devices to achieve timely calculations of best assignments and quantities.

42. A computer system of claim 37 wherein a measure of the utility of at least one state of the at least one attribute is used to compute a rating for the overall satisfaction of a request with respect to a given offering by using at least one technique selected from the group consisting of:

(a) weighted fuzzy-logic conjunction operators,

(b) weighted geometric means,

(c) a weighted version of Yager's T-NORM,

(d) weighted arithmetic means, and

(e) a weighted combination, with the weights derived via analytic hierarchy analysis.

43. A computer system of claim 37 wherein the means used in determining the quantity and identity of assignments of sellers' offerings to buyers' requests are available to market participants.

44. A computer system of claim 37 wherein different instances of at least one module of the entire system is specialized for each different market.

45. A computer system of claim 37 wherein an ontology is used to support inference of the match of the at least one attribute states of a request which is logically implied by the at least one attribute states of an offer.

46. A computer system of claim 37 wherein explicit transfer of funds is not required.

47. A computer system of claim 37 wherein advertisement of the availability of commitment protocols and time qualifications supported by the system leads to the market evolution of the most efficient protocols and time qualifications.

48. A computer system of claim 37 wherein advertisement of the optimality of honest characterization of the utility of each attribute utility causes market participants to communicate an honest assessment of those utilities, thereby improving the market for both buyers and sellers.

49. A computer system of claim 37 wherein auction protocols are invoked when there are at least two requests per one offer or at least two offers per one request.

50. A computer system of claim 37 wherein the abstract representation of the relationship of the utility of an attribute of the request is created using at least one technique selected from the group consisting of:

(a) linear functions,

(b) piece-wise linear functions,

(c) logistic functions,

(d) cubic splines,

(e) look-up tables, and

(f) other numeric functions that compute utility with respect to a given attribute's states.

51. A computer system of claim 37 wherein the abstract representation of the relationship between price of the offer and at least two states of an attribute of the offer, is created using at least one technique selected from the group consisting of:

(a) linear functions,

(b) piece-wise linear functions,

(c) logistic functions,

(d) cubic splines,

(e) look-up tables, and

(f) other numeric functions that compute price with respect to a given attribute's states.

52. A computer system of claim 37 wherein the abstract representations of requests and offerings are communicated by termsheets and offersheets, respectively.

53. A computer system of claim 37 wherein requests describe employment positions and the offerings describe employee attributes and compensation requirements.

54. A computer system of claim 37 wherein the requests describe tasks to be accomplished, and the offers describe agents, people and or software, willing to accomplish those tasks.

55. A computer system of claim 37 wherein the information is communicated through the internet by internet protocol messages.

56. A computer system of claim 37 wherein buyers and sellers access the system via web pages, Java clients, or other executable client programs.